



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,632	08/28/2003	Paige M. Holm	CML01187CR	1826
23330	7590	03/26/2004	EXAMINER	
MOTOROLA, INC.			TSAI, H JEY	
CORPORATE LAW DEPARTMENT - #56-238			ART UNIT	
3102 NORTH 56TH STREET			PAPER NUMBER	
PHOENIX, AZ 85018			2812	

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/652,632	<b>Applicant(s)</b> HOLM ET AL.	
	<b>Examiner</b> H.Jey Tsai	<b>Art Unit</b> 2812	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-20 is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. 2003/0157748 in view of Yang 2004/0041178.

The reference(s) teach the features :

Kim substantiantially discloses a method of forming an electronic semiconductor device, which includes :

providing a processed electronics layer 130 or 730 (wafer #3), para. 20-21, or 41-42,  
providing a photosensing element 222 (wafer 220, fig. 2) or 740 (wafer 4) having an interconnect via 106,

photosensing element (optical communication devices, see para. 20) fabricated in an integrated optically silicon active layer 222 or 742, photosensing element substantially decoupled from the metal interconnect via 106 (see fig. 2, 3A-3B and para. 22-40),

bonding the optically active layer to electronics layer, wherein optically active layer 222 (wafer 220) or 740 (wafer 4) is disposed substantially proximate to a metalization surface 106 of the electronics layer wafer 210 or 730 (wafer 3) so as to effectively permit fabrication of the interconnect via 106/226, see fig. 2 or 7B and para. 28 or 42-43.

The difference between the reference(s) and the claims are as follows: Kim et al. teaches bonding an active layer containing optical communication device to a metalization surface of the electronic layer but does not teach that optical communication device includes photo diodes. However, Yang teaches at para. 3, photo diode is an optical communication devices.

In addition, specific dimension of connection density and photosensing filling factor as claimed are taken to be obvious since these are variables of art recognized importance which are subject to routine experimentation and optimization and discovery of an optimum value for a known process is obvious. In re Aller, 105 USPQ 233 (CCPA 1955). And, even if applicants' modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within the capabilities of one skilled in the art, In Re Sola 25 USPQ 433.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Kim's optical communication device to include photo diodes as suggested by Yang because optical communication device including photo diodes can be used as imaging sensors. And, since, Kim teaches in para. 1 to form a high via density with optimum metal bonding area, hence, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have specific connection density and photosensing element filling factor by routine experimentation to obtain an optimum value.

***Allowable Subject Matter***

Claims 17-20 are allowable over the prior art of record for the reason of an active epitaxial layer is formed on an SOI wafer and forming an optically reflective structure over the

Art Unit: 2812

surface of donor wafer and optically re-planarizing the top surface of the donor/hose composite structure.

**Any inquiry of a general nature or clerical matters or relating to the status of this application or proceeding should be directed to the Group customer service whose telephone number is (703) 306-3329 and Fax number (703) 872-9306. Group receptionist telephone number 703-308-0956.**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. Jey Tsai whose telephone number is (571) 272-1684. The examiner can normally be reached on from 7:00 Am to 4:00 Pm., Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (571) 272-1679. The fax phone number for this Group is (703) 872-9306.

hjt

3/22/04



H. Jey Tsai  
Primary Examiner  
Patent Examining Group 2800